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DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT
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April 6, 2010

Mr. Michael Berkoff
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (SRF-6J)
Chicago, Illinois 60604-3507

Dear Mr. Berkoff:

SUBJECT: Review of the Draft Allied Paper, Inc., Operable Unit Feasibility Study
Report, dated October 29, 2009

The Michigan Department of Natural Resources and Environment¹ (DNRE) has reviewed the draft Feasibility Study Report for the Allied Paper, Inc. Operable Unit prepared for the site by Arcadis. The DNRE supports the United States Environmental Protection Agency (USEPA) disapproval of the document in accordance with Section X, 39(d) of the Administrative Settlement Agreement and Order on Consent. Although the document is consistent with USEPA guidance in general, the specifics of the report do not present the information in a way that is consistent with the facts for the Operable Unit and make a fair evaluation of the presented options difficult. In addition, the options presented in the Feasibility Study do not fully capture the array of alternatives that should be considered for the Operable Unit. As such, the document will need to be revised to provide additional information so that a fair and balanced evaluation of the remedial alternatives can be conducted.

The report left out an appropriate level of discussion on several major issues which complicated review of the document. These issues included the following:

- Separation of waste from Portage Creek – Separation of residual waste from surface water is a consistent goal at the site and the Feasibility Study needs to more clearly explore the cost associated with increasing the isolation distance of the waste at the Operable Unit.
- Monarch Historic Residual Dewatering Lagoon – The long-term maintenance of the Monarch Historic Residual Dewatering Lagoon under a Part 115² closure will

¹Executive Order No. 2009-45, which took effect on January 17, 2010, created the DNRE; transferred all the authority, powers, duties, functions, responsibilities, personnel, equipment, property, and budgetary resources from the Michigan Department of Natural Resources (DNR) and the Michigan Department of Environmental Quality (DEQ) to the DNRE; and abolished both the DNR and the DEQ. All statutory and other legal references to the DNR or DEQ are deemed references to the DNRE.

²Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

present some practical challenges. The true costs of implementing a closure in this area need to be more detailed to evaluate the true nature of such a selection, including cost for removal.

- Part 115 Cap – Much of the post placement capping of the waste is not in compliance with Part 115. Remedial options that are compliant with post placement capping need to be developed in the Feasibility Study for a more balanced evaluation of the alternatives. Additionally, the inclusion of permeable cover remedies in the Feasibility Study does not meet the threshold criteria of compliance with Applicable or Relevant and Appropriate Requirements.
- Groundwater – Groundwater issues are essentially ignored in the report. As identified in the March 2008 Remedial Investigation report, the waste at the Operable Unit is a threat to groundwater quality and options need to be more rigorously developed given it is a serious consideration of the remedial options. The report must also develop and cost out the need for long-term monitoring of groundwater, to include all Chemicals of Concern further discussed in the following comments.
- Outlying Areas – The remedial options presented in the report do not fairly look at permanent disposal of waste in off-site areas. Material that is not consolidated on-site will require full isolation under Part 115 with ongoing monitoring. The cost presented in the Feasibility Study should more accurately reflect the true cost of leaving waste in the outlying areas.
- Sheetpile – The Feasibility Study describes the sheetpile as affecting slope stability only, when in fact, the sheetpile has had a major impact on groundwater flow at the site. The Feasibility Study should more carefully consider the disruptive influence the sheetpile has on groundwater flow and more carefully consider a variety of options that are consistent with sheetpile removal (pulling sheets entirely versus cutting below grade).
- Seeps – The Feasibility Study has ignored the seeps. Remedial options that address the seeps need to be included in the document as well as contingent remedies for the seeps should remedies fail to address the exceedances.
- Bryant Mill Pond – The Feasibility Study ignores the former Bryant Mill Pond area. An evaluation of what, if any, additional remedial actions are required following the removal action needs to be conducted regardless of liability. At a minimum, the document should identify who will address the issues and when it will be conducted.
- Consideration of restoration and future development issues should be included in the Feasibility Study to improve overall efficiency.

It is in the context of these deficiencies that the following comments are provided.

General Comments

1. The lines depicting the extent of remedial consideration drawn on the alternatives maps are estimates only. The exact location of where consolidation/removal activities should end and begin, will need to be informed by additional data collection (e.g., remedial design sampling) to determine final extent or estimate final volumes. This is especially the case for off-site areas near the residential/commercial properties.
2. The issue of where to apply soil criteria versus sediment criteria has yet to be determined. For consistency with other Operable Units and the Remedial Investigation, the determination should be based on a process that evaluates areas that are inundated for a minimum time period derived through a defensible process. Once the line is established, sediment criteria should be applied to one side, and the appropriate terrestrial criteria to the other (e.g., ecological risk, residential, commercial, or industrial).
3. Areas in the former Bryant Mill Pond have been excluded for consideration in the Remedial Investigation. Existing data suggests that some level of effort may need to be considered in select areas.
4. Select areas between the sheetpile and Portage Creek have been eliminated for additional remediation. Existing data suggest that these areas require additional consideration before they are removed from the Feasibility Study.
5. It appears that the Alternatives 2A, 2B, 3A, 3B, 4A, and 4B are all relatively minor variations of the same approach and use of technology, in that these alternatives all are "consolidate and cover/cap" alternatives with relatively minor differences in areas to be excavated and consolidated, use of covers versus capping, and provisions for some off-site disposal of areas to be excavated. The number of alternatives should be reduced to only consider Applicable or Relevant and Appropriate Requirements compliant capping and consolidation technologies for each of the sub areas of the Operable Unit.
6. Alternative 5 (Total Removal and Off-site Disposal, Sheetpile Removal, Institutional Controls) and Alternative 6 (Hazardous Waste Landfill Containment System, Sheetpile Removal, Institutional Controls) are high total cost alternatives that contain a potentially viable and desirable component of the remedy, namely, sheetpile removal. Consideration should be given to another alternative that would include sheetpile removal with most of the same components that appear in Alternatives 2, 3, and 4.
7. Discussion of the steel sheetpile needs to include more summary information about the installation (i.e., depth, sheeting size, etc.), and corrosion discussion needs to

meet minimum standards for a corrosion assessment for all alternatives that rely on the sheetpile to remain intact as part of the Operable Unit closure.

8. Impacts of remedies relative to eventual removal of the Alcott Street Dam remnants should be considered as appropriate.
9. Generally, there is little to no discussion of anticipated changes to groundwater levels, flows, etc., after each or any of the alternatives are constructed. There is little to support the assertion that the groundwater/surface water interface pathway (after the remedy is carried out) will not be problematic in the future. If the groundwater collection system is shut down, then effects on leakage through the sheetpile wall and/or changes in gradients will need to be considered, etc.
 - a. Water has been observed leaking through the above ground portions of the "sealed" sheetpile joints. There is at least one sample collected from a leaking sheetpile joint that has detections of Polychlorinated Biphenyls (PCBs).
 - b. The existing groundwater extraction system around the Bryant Historic Residual Dewatering Lagoons/Former Residual Dewatering Lagoons area is assumed to be placed in a "monitor only" state. There is no indication that any assessment has been made of what happens after the extraction and treatment system is deactivated. The effects of system shutdown need to be considered.
10. The nature and extent of contamination for all media (sediment, soil, residuals, groundwater, seeps) was defined in the Remedial Investigation and considered PCBs above Preliminary Remediation Goals established by the USEPA. Additional Chemicals of Concern identified above Part 201³ Screening Criteria for various media include dioxin/furans, Volatile Organic Compounds and Semi-Volatile Organic Compounds, aluminum, barium, copper, cyanide, lead, mercury, and zinc.
11. Section 2.3 Remedial Action Objectives – Remedial Action Objective 4 is not appropriate and is addressed as part of the short-term effectiveness criteria in the detailed evaluation of alternatives. This should be deleted from all analyses in the Feasibility Study and addressed solely as part of the nine criteria detailed analysis.
12. Presentation of Remedial Action Objective 4, discussion to eliminate rail option in Section 3.1, and Attachment 6 risk assessment clearly combine to skew off-site disposal options. This is inappropriate and should be analyzed consistently in the detailed analysis of alternatives in accordance with the nine criteria.
13. Section 1 is meant to be a summary section of background history, etc. However, there are several conclusions contained in this section that should be in later sections of the Feasibility Study. These are detailed below in the specific comments.

³Part 201 Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

14. Section 3 is poorly written. The vague reasons given to explain why certain process options were not retained could just as easily be used to rule out the options that were retained and vice versa.

Specific Comments

1. Section 1.2, page 1-4, third bullet – This bullet should include the Bryant Mill Property (Millennium Holdings, LLC) as depicted in Figure 1-2.
2. Section 1.3, page 1-5, second paragraph, fifth line – Use of the word “majority” implies that >50% of PCB material has been contained or “stabilized,” but the area of Type III Landfill, Monarch Historic Residual Dewatering Lagoons, and the Western Disposal area added together is larger than the capped portion that is actually stabilized.
3. Section 1.3.2.1, page 1-6, first bullet – More details summarizing the nature and extent of the steel sheetpile wall should be provided.
4. Section 1.3.2.1, page 1-6, second bullet – Any confirmation sampling results and the condition of the subgrade should be summarized.
5. Section 1.3.2.1, page 1-6, third bullet – Text states that the Bryant Historic Residual Dewatering Lagoons/Former Residual Dewatering Lagoons cap was “designed” to meet Act 451, Part 115 solid waste regulations, but it does not comply with the regulations. For example:
 - a. The sheetpile is not an appropriate Part 115 barrier because the “waste in contact with sheetpile” construction is not consistent with Part 115. Additionally, the joining of the impermeable cap material and sheetpile was based on best professional judgment but is also not in compliance with the regulations.
 - b. Specific integrity issues include the time the geomembrane was exposed to the environment and the means and methods of membrane patching. The Flexible Membrane Liner installation commenced in 2000; however, portions of the liner were left exposed to the elements prior to completion of the cap in 2004. Many of the concerns expressed regarding the exposed cap were not addressed and activities resulted in the completion of +1,000 patches.
6. Section 1.3.2.1, page 1-7, (continuation of) fourth bullet:
 - a. The reference to MDEQ Groundwater/Surface Water Interface criteria is wrong. It should be 0.2 micrograms per liter, not 0.02 micrograms per liter.
 - b. The ninth line down says “PCBs have not been detected in water coming into the treatment system ABOVE the reporting limit...” whereas, Section 1.8 states that

one sample contained a PCB detection AT the reporting limit. The sentence in the bullet is misleading and should be revised.

- c. Eight MDEQ water samples taken directly from the permanent sumps (1-5) on April 25, 2002 were all above detection limits and total PCB concentrations ranged from 0.062 to 1.29 micrograms per liter.
7. Section 1.3.2.1, page 1-7, last paragraph, first sentence – A reference is made to 89,600 cubic yards (cy) of material were consolidated as a result of Interim Remedial Measure activities listed in the bulleted items of Section 1.3.2.1; however, the previous bullets only mention “several hundred cy.” The volume discrepancy needs to be explained.
8. Section 1.3.2.2, page 1-7, first paragraph – It should be noted that while post-excavation samples were below 1 milligram per kilogram, additional excavation (e.g., during construction of seep wells) in the floodplain yielded observed and/or analytically confirmed residuals/PCB-containing soils in areas (e.g., soil at SP-242 and SP-254 had hits of 5.4 and 12 milligrams per kilogram respectively; soil at seeps G/H/I/J ranged from 0.66 to 5.4 milligrams per kilogram). Therefore, it is reasonable to assume that PCB-containing soils still exist in the floodplain at concentrations above 1 milligram per kilogram and potentially above 10 milligrams per kilogram.
9. Section 1.3.2.3, page 1-8, first paragraph, third line – Define/quantify what a “small volume” is, along with indicating how the sludge was disposed of in the western disposal area (e.g., buried under fill, left on top of existing soil, etc.). Was there oversight of this activity? If not, the Feasibility Study should state the work was done without approved plan and oversight.
10. Section 1.4.1, page 1-9, first paragraph, second sentence – The report states, “Where present, PCBs are found at low concentrations in sediment, groundwater, leachate, and groundwater seeps.” This statement ignores the fact that these low levels still exceed the criteria for the various media: sediment is 0.33; Groundwater/Surface Water Interface is 0.2 parts per billion; drinking water is 0.5 parts per billion; and, many inorganics exceed the generic Groundwater/Surface Water Interface criteria as well.
11. Section 1.4.2, page 1-9, second paragraph – PCB transport in groundwater discussion should acknowledge that PCB transport in groundwater is possible and has been observed at other sites, generally occurring along high permeability preferential flow paths that may exist as a result of various geologic conditions or manmade conditions.
12. Section 1.4.2, page 1-9. PCB Transport in Groundwater – The report indicates that Feasibility Study alternatives address the formation and migration of leachate. It is presumed this Conceptual Site Model envisions that PCBs only make it to groundwater through leachate generation and that a cap will eliminate leachate

generation. The fact is, waste is in the water table and eliminating infiltration will reduce leachate generation but not eliminate it. Despite PCBs' tendency to sorb to organic materials, contact of the waste with groundwater will continue to cause the transport of PCBs through the groundwater with Groundwater/Surface Water Interface being a key consideration. As with other Operable Units at the site, groundwater monitoring to evaluate changes in groundwater concentrations over time will be required into the future. Additionally, contingencies should be considered to deal with groundwater if criteria are not met.

13. Section 1.4.2, page 1-9, last paragraph:

- a. This paragraph needs to reference the date range of data Arcadis is considering to be "current" and "historic." The last groundwater sampling event was in spring 2003 and fall/winter of 2002. The Remedial Investigation recognizes the need to combine these two years of data (page 4-31 of Remedial Investigation) as the "current" dataset.
- b. The statement that PCB detections (third line) are only confined to the seeps is false and needs to be changed. There are PCB detections in wells both in the "vicinity" of residuals (MW-224, MW-8, MW-120A, MW-120B, MW-124B, MW-122AR, FW-101, GW-10) and in areas that have been remediated (MW-224, MW-200A, MW-209, MW-221R).
- c. Again, the groundwater datasets are now seven to eight years old and conditions/concentrations at one and/or all the wells may have changed.

14. Section 1.4.2, page 1-10, PCB transport in Portage Creek - The report limits this discussion to consideration of soil erosion. However, other issues need to be considered and addressed in the report.

- a. For example, the Bryant Mill Pond removal was highly effective. However, elevated concentrations remain in the former Bryant Mill Pond and the need for additional removal should be considered. Areas between the sheetpile and Portage Creek have had only interim removal conducted and should also be considered. Groundwater has been shown to be transporting PCBs to Portage Creek. Groundwater will need to be continually monitored given it is a potential source to the creek. Contingencies for groundwater treatment should be addressed.

15. Section 1.4.2, page 1-10, fourth paragraph, PCBs in Fish:

- a. If implemented correctly, risk based goals for fish in Portage Creek can be met. This requires an honest evaluation of uncontained sources that remain at the site following the completion of interim remedial measures (concentrations in both soil and sediment), inputs from groundwater, migration via erosion, etc.

- b. First line – The term “sustained” should be further defined or deleted since it implies that fish will only bioaccumulate PCBs if they are in contact with PCB sediment for a “long period of time.” Fish also bioaccumulate PCBs through other mechanisms such as contact with surface water, benthic invertebrates, etc.
16. Section 1.5, page 1-11, Supplemental Groundwater Study, third paragraph - The absence of detections of PCBs in the city’s water samples is only one line of evidence that supports the assessment of whether or not PCBs are moving towards the city well fields. It is not acceptable to use this as a stand alone line of evidence. Additionally, the conclusion reached in paragraph four of this section overstates the certainty based on available data sets.
 17. Section 1.6 – The drinking water pathway should be considered until it is eliminated through Institutional Controls. Outstanding questions include whether off-site properties will require Institutional Controls for drinking water protection and which ones. (e.g., Seep O [which is off property] and MW-6 [on the property boundary] regularly exceed criteria).
 18. Section 1.6, page 1-13, Table 1-1 – A line item for surface soils (Human Health – Fish Consumption) that are inundated periodically (criteria not defined yet) needs to be included in the table with appropriate criteria (0.33 milligrams per kilogram) referenced. At some point a decision needs to be made regarding where aquatic versus terrestrial criteria are applied.
 19. Section 1.7, page 1-14, third bullet – This paragraph is misleading. The Interim Remedial Measures in the floodplain (with exception of the East Bank) were not designed to remove all PCB containing soils from the floodplain but was a “sample excavation,” meaning areas were excavated until a PCB sample was below 1 milligram per kilogram. PCB containing soils still remain in the floodplain with concentrations from 1 to 10+ milligrams per kilogram and, as such, it should be considered in the alternatives.
 20. Section 1.7, page 1-15, second bullet – The report states, “Where available, updated Act 451, Part 201 screening criteria were used.” This should be removed from the report as criteria have not been updated since the completion of the Remedial Investigation. The DNRE sees no reasons why tables already created for the Remedial Investigation were not directly used in the Feasibility Study.
 21. Section 1.7.1, page 1-15, first paragraph, third line – PCBs have been left out as a Chemical of Concern for groundwater. PCBs are a Chemical of Concern for groundwater and must be reflected in the report.
 22. Section 1.7.1, page 1-15, second bullet – Remove the last part of bullet that states, “which is most representative of current conditions.”
 23. Section 1.7.1, page 1-16, first paragraph:

- a. Paragraph should also include text that ten wells have reported PCB detections, and the highest exceedance is roughly double the Preliminary Remediation Goals.
- b. Two of 20 seep wells exceed the Preliminary Remediation Goals, but it should be noted that there were four other wells that had PCB detections. It should also be noted in the text that the exceedances are an order of magnitude higher than the Preliminary Remediation Goals.

24. Section 1.7.1, page 1-16, second paragraph:

- a. Fourth line says MW-8A “filter pack” installed in residuals. Based on the boring log, cement grout and bentonite slurry are within the residuals and the filter pack is below residuals. Statement should be revised.
- b. Fifth line – The sample referenced for FW-101 was actually collected at MW-206A from 0-4 feet (with hit of 8.4 milligrams per kilogram PCB).

25. Section 1.7.1, page 1-16, paragraphs 2, 3 and 4 – These paragraphs are unclear and seem to dismiss the issues associated with both the groundwater and the seep that previously had PCBs detected at concentrations above the Preliminary Remediation Goals. The logic and justification for the conclusion that, “Based on the limited number of sampling locations where PCBs were detected in samples of groundwater and seeps at concentrations above PRGs, and the apparent inability for the PCB-containing materials to serve as a significant source of contamination to groundwater that discharges to Portage Creek, PCBs are not identified as a COC in groundwater.” This conclusion is unsupported by this discussion and suggests that the presence of samples with PCBs above the Preliminary Remediation Goals should be dismissed because of the “limited number” and the “apparent” inability of these materials to serve as a source, which is inconsistent with Applicable or Relevant and Appropriate Requirements.

26. Section 1.7.2, page 1-18 – The report states, “Based on the minimal number of locations in which they were detected above GSI in groundwater and seeps samples, no inorganic constituents are identified as COCs in soil, residuals, groundwater, or seeps.” This section is generally full of misstatements; (e.g., However, of these inorganic constituents, only cyanide, manganese, and zinc were detected at concentrations exceeding Groundwater/Surface Water Interface criteria in groundwater or seep sample [see Table A5-9 for mercury exceedances of Groundwater/Surface Water Interface in groundwater and seeps]). To the contrary, inorganics are a Chemical of Concern in groundwater and will require long-term monitoring with a contingency for groundwater treatment. The report must be corrected.

27. Section 1.8, page 1-18, first paragraph, last sentence – This sentence should be deleted. There were previous groundwater data in monitoring wells that showed PCB contamination.
28. Section 1.8, page 1-18, second paragraph:
- First sentence – State what time extraction/treatment system started, frequency of required sampling, and average monthly volumes treated. Confirm in the report that there have been no detections of PCBs in the influent to the treatment system and the associated detection limit.
 - Second sentence- Confirm the reporting limit of 0.010 micrograms per liter is accurate. The Preliminary Remediation Goal shown for groundwater should be 0.2 micrograms per liter, not 0.02 micrograms per liter.
29. Section 1.8, page 1-18, third paragraph – Add a sentence to end of paragraph that says, “However, PCBs were detected in monitoring and seep wells in areas that were believed to be clean or had been remediated.”
30. Section 1.8, page 1-18, fourth paragraph, first sentence – Use of the word “paucity” is not accurate to describe detections of PCBs in groundwater; need to revise. In 2002/2003, there were 17/133 well samples with detections (or ~13%) and 16/71 seep samples with detections (or ~23%). Not mentioned is the fact that a majority of the wells in the network now have only been sampled once (e.g., MW-215 through MW-232) and even some of the “newer” 200 series wells (e.g., MW-206 to MW-214) have only two events of data. Data from one and even two events cannot dismiss PCBs in groundwater as a Chemical of Concern.
31. Section 1.8, page 1-18, fourth paragraph states, “It is possible that the actions of grading and capping the materials in the Bryant HRDL/FRDLs have sufficiently reduced the infiltration of water through the residuals to the extent that groundwater extraction to address the potential for PCB migration in groundwater is not necessary.” The groundwater extraction system was installed to control groundwater heads in the area of the residuals following installation of the sealed joint sheetpile. The main concern being that the sheetpile restricted a major groundwater flow path that would result in elevated groundwater elevation and additional saturation of previously unsaturated material, infiltration rates were never conceptualized as a major factor in influencing heads in the area. A simple mass balance estimate, as opposed to a presumed possibility, will help put infiltration into context as it may relate to affecting groundwater elevations at the site. It is controlling the saturation of previously unsaturated material that should be the focus of this discussion. A simple mass balance should include regional groundwater and precipitation/infiltration flux through the former operational area waste deposits, relative permeability/hydraulic conductivity of waste and natural formations, relative effect of existing impermeable cap, and proposed impermeable or soil caps on the groundwater mass balance, relative effect of the existing groundwater extraction system under existing and terminated operating conditions, and an equilibrium

based assessment of potential, worst case PCB mass flux through the aquifer and/or to Portage Creek under the above conditions.

32. Section 1.8, paragraphs 4 and 5, page 1-18 – This section discusses the groundwater extraction and treatment system as an Interim Remedial Measure. Since this section is meant to be a summary of background and the history of the site, it seems inappropriate that it is used to make a concluding statement regarding the continuation of the treatment system such as “the continued need for operation of the system is questionable” and “It is therefore been assumed for the purposes of this assessment that although groundwater monitoring will be a component of the selected remedy at the Allied OU, groundwater extraction and treatment may be retained as a contingency remedy only if monitoring data indicate that other technologies have not adequately met groundwater RAOs.” No consideration seems to have been given to what happens to the groundwater levels, gradients, flows, etc., if the extraction system is allowed to be shut down.
33. Section 2.1, page 2-1, second paragraph, tenth line – The clay seam area portion beyond 790 feet should also be described.
34. Section 2.3 – Delete Remedial Action Objective 4 in its entirety.
35. Section 2.3, page 2-5 – In-situ Treatment – Revise “remove or destroy” to “reduce mobility, toxicity or volume” to be consistent with Ex-situ treatment and USEPA guidance.
36. Section 3.1, page 3-1 – The text states, “...installation of a sheetpile wall is a process option under erosion control.” Although it is recognized that the sheetpile is likely not an effective groundwater barrier as installed at the site, it seems that it is appropriate to be considered in Table 3-1 under Item E (in-situ) 3 (hydro contain) as a possible option as a hydraulic barrier for upstream areas of the site to impede groundwater flow through on-site waste material.

Also, many items are dropped between Table 3-1 and 3-2 with no apparent explanation (for example, the funnel and gate technologies).
37. Section 3.1, page 3-2, last paragraph – Removal of rail option here is inappropriate. These, in conjunction with Attachment 6 analysis, are clearly attempts to skew analysis of complete removal alternatives. Either keep rail option in analysis or delete Attachment 6.
38. Section 4, page 4-2, first paragraph – Section indicates that if groundwater contingency is needed that “MHLLC would develop the plan in consultation with the USEPA at that time.” This language, as well as any future obligation to Millennium Holdings’ involvement, should obviously be removed.
39. Section 4, page 4-2, second paragraph – The report describes the sheetpile as being installed “to stabilize the perimeter berms of the Bryant HRDL and FRDLs.” The report again puts the sheeting in the context of stabilization only. This inappropriately leaves the document silent on issues that explain why the joints were

sealed and that the installation had a significant effect on groundwater flow paths at the site.

40. Section 4.1, page 4-2 – The description of the No Action alternative is dismissive of impact to the natural system. Groundwater would also be a continuing unaddressed impact.
41. Section 4.2, page 4-3 – The concept of leaving waste in outlying areas with only soil cover does not constitute a viable option. Threats from the waste are not limited to only direct contact hazards. Use of earthen cover only at the site is not a viable option.
42. Section 4.2, page 4-3, first paragraph - The maximum and minimum grades of the cap should be presented for the top and side slopes.
43. Section 4.2.1, page 4-5, Description of Alternative 2A – In addition to the size of the area, the height of any waste placed and the resulting grades should be presented.
44. Section 4.2.2, page 4-6, second full paragraph – Additional details on resulting height of the wastes and grades should be presented for the top and side slopes of the areas capped. Note: this comment also applies to the other alternative descriptions when material is to be consolidated on existing waste areas.
45. Section 4.3, page 4-7, second paragraph – Issues related to tie-in of the cap to sheetpile have never been resolved. Also, any consolidation settlement around the sheeting due to additional filling needs to be considered as it relates to the potential effects on the integrity of the wall. The descriptions of the sheeting and quantitative descriptions of its integrity are generally lacking in the document. Note: this comment also applies to the other alternative descriptions when the steel sheeting is assumed left in place.
46. Section 4.7, page 4-17 – Contingent groundwater remedies must be priced out for consideration by the agencies.
47. Section 4.3, page 4-7, third paragraph – The estimated slope angle of the “stable repose” should be identified and its effect on the stability of the landfilled area assessed. Any minimum strength requirements for the placed material should also be identified.
48. Section 4.7, page 4-17, first paragraph, second sentence – Only well network around operational or disposal areas. If we are leaving residuals in place (e.g., commercial properties), we need to have wells located downgradient of these deposits. It is expected that pre-sampling will be conducted to further define extent in these areas. Also see Table 3-3.
49. Section 4.7, page 4-17, first paragraph, sixth line – Wells should be sampled quarterly not semiannually as done at Operable Unit 3; also, one event each year should have full list of parameters (metals, volatile organic compounds, semi-volatile organic compounds, general chemistry) as done at Operable Unit 3.

50. Section 4.7, page 4-18, item 6, last sentence – This sentence should be deleted as this is an inappropriate level of detail for the Feasibility Study.
51. Section 4.8.2.1, page 4-20, first paragraph, eighth line – Any assertion of sheetpile longevity will require that a more rigorous evaluation be conducted.
52. Section 4.8, page 4-19, first paragraph – The assessment summarized in this section is very biased and does not present the pros and cons of such an approach or potential alternatives that could be more effective in the long term for groundwater migration and control.
53. Section 4.8.1, page 4-19, second paragraph – Provide backup calculations on the estimated quantities of materials that would need to be excavated and any pertinent details used to make this statement. Also, please provide an explanation on the complexity mentioned. Provide details, figures, etc., as necessary to support these conclusions.
54. Section 4.8.1, page 4-19 – Given the nature of the sheetpile and its influence on groundwater, cost estimates for pulling the sheetpile (some or all) should also be included. Simply cutting the wall off two feet below grade may not be appropriate in all instances.
55. Section 4.8.2.1 Long Term Operation and Maintenance of sheetpile, page 4-20 – This assessment of the potential corrosion of the steel sheetpile wall is incomplete and does not include an acceptable discussion of the potential corrosion of steel sheet piling in the ground long term. If necessary, a corrosion expert may need to perform an appropriate assessment. There is insufficient information and analysis presented to provide the opinion on page 4-21.
56. Section 4.8.2.2 Groundwater Mounding and Monitoring, pages 4-21 and 4-22 – This assessment of the groundwater mounding and monitoring is not sufficient to draw the conclusions presented in the Feasibility Study. There is no discussion on the changes to the hydrogeologic regime that are likely to result from the selected remedies. The area geology is complex and the changes that will likely occur after the remedy is implemented need to be assessed in a manner that provides sufficient support for the remedy selection.
57. Section 4.8.2, page 4-22 – The report makes several assumptions regarding groundwater. The Remedial Investigation report gave us a general understanding of groundwater based on specific sampling points. We have to use this information to draw conclusions about conditions that exist in unsampled locations. Having no separation between the waste and the creek, along with the presence of the sheetpile, limited the investigation's ability to place wells in a typical fashion. Assumptions were made in determining where to place the wells. A monitoring system would be much easier to locate if the sheetpile were removed and if separation between the creek and waste were created. Having the unusual conditions at the site creates additional uncertainties as it relates to data

interpretation. Assumptions and uncertainties must be more fully explained in the report.

58. Section 4.8.3, page 4-23, third paragraph on cost – The statement about the cost for the sheetpile removal being controlled by the cost for off-site disposal of excavated material unnecessarily ties the sheetpile removal with off-site disposal. On-site consolidation is also possible and the report should consider the consolidation of any materials that have to be removed under the existing cap or in another area of the site as they have for other alternatives.

59. Section 4.8.3, page 4-23, Summary – This summary and conclusion is not supported by the information provided and will, therefore, need to be re-written.

60. Section 6.1, page 6-1 - The report states that Alternatives 2 through 6 are basically the same as they would allow all the Remedial Action Objectives and Applicable or Relevant and Appropriate Requirements to be achieved. This is an inappropriate presentation of the facts. Permeable caps are generally not consistent with Applicable or Relevant and Appropriate Requirements given the contaminants.

This section goes on to downplay the risk of PCBs by overstating the assurances in relation to the physiochemical properties. The fact is a large mass of waste is located directly adjacent to a surface water body. Regardless of the properties, the resource is at risk of degradation due to the waste. Serious efforts to isolate the waste are necessary to limit impacts to the resource

61. Section 6.2, page 6-3 – The discussion of Applicable or Relevant and Appropriate Requirements is incorrect in that Applicable or Relevant and Appropriate Requirements are not met by all of the alternatives, especially those calling for a permeable cover.

62. Section 6.3, page 6-3 – Long-term effectiveness and permanence of certain remedies are overstated. Given the large quantity of material and its relatively close proximity to the creek, this characterization is inadequate. Efforts to reduce the quantity of waste and increase the distance of the waste from the creek will have definite increased effectiveness that must be considered.

63. Section 6.5 – A great deal of detail has gone into this discussion, especially when compared to other sections. The discussion of short-term effectiveness is out of proportion to the level of discussion for other topics in Section 6.

64. Section 6.6 – Although it is appropriate to discuss and consider implementability issues in the report, this section seems to only act as a warning that those remedies that require additional effort will have serious implementability issues. The fact is that all of these technologies (excavation and capping) can be implemented, they simply have cost considerations. This point is being confused in the report.

65. Table 2-2 – Several of the To Be Considereds appear to be Applicable or Relevant and Appropriate Requirements. The DNRE and USEPA need to agree to this table prior to the Record of Decision. Specifically, Toxic Substances Control Act, Clean

Water Act 40 Code of Federal Regulations 230, Resource Conservation and Recovery Act Subtitle D, State Landfill location and natural soil barrier restrictions, may need to be designated as Applicable or Relevant and Appropriate Requirements.

66. Table 3-2 – Delete all Remedial Action Objective 4 references.

67. Figure 2-1:

- a. The legend for Bryant Historic Residual Dewatering Lagoons/Formal Residual Dewatering Lagoons implies it is an approved Part 115 cap, which it is not. The legend must be modified.
- b. In the Bryant Mill Property subarea (near dam), the pump house and stack were removed (in 2003/2004?) and should be hatched yellow.

68. Figure 4-1 through Figure 4-9:

- a. The clay seam area is represented in pink, meaning it was a “previously remediated area.” A portion of the clay seam has never been remediated and should not be colored as such.

69. Table 3-3 – There should be an “X” in each box under the Contingent Groundwater Remedy column.

70. Attachments 4 and 5 – The information contained in Attachments 4 and 5 appears to be quite different from the information presented in the Remedial Investigation. Interpretation of the data appears to have had a series of undefined simplifying criteria applied. These interpretations greatly impact how each area is viewed compared to Preliminary Remediation Goals. These interpretations/reclassifications need to be reviewed/evaluated in further detail and approved by the agencies. Comments below do not detail all discrepancies but represent important issues.

- a. Attachment 4, Table A4-1 – Appears to be missing data for surface samples BLHB-2 (4.3 parts per million) and DLHB-5 (8 parts per million) from Table 4-2B of the Remedial Investigation. These might be missing because Arcadis says the Remedial Investigation surface data from Bryant Historic Residual Dewatering Lagoons are now considered subsurface. If that is true, these two samples should be added to Table A4-2.
- b. Attachment 4, Table A4-2 – Appears to be missing data based on Preliminary Remediation Goal of 6.5 parts per million for MLSS-2 (20-22), MLSS-3 (16-18, 18-20), MLSS-5 (20-22), MW-126B (6-8, 12-14), MW-125B (8-10, 18-19), WA-4 (6-8), BHDL-22 (10-12 with range of PCBs 93-430, two samples).
- c. Attachment 4, Table A4-3:
 - i. There appears to be missing data based on Preliminary Remediation Goal of 0.5 parts per million for 28 former Bryant Mill Pond samples, 10 former

operational areas, and 3 residential. All data from the various areas need to be included in the report for appropriate consideration.

- ii. Field header is misleading for 0.33 milligrams per kilogram criteria. As is, it is labeled as MDEQ Screening Criteria, which is true, but 0.33 milligrams per kilogram is also a Preliminary Remediation Goal protective of fish consumption. The header needs to say 0.33 milligrams per kilogram is the Preliminary Remediation Goal.
- d. Attachment 4, Table A4-4 – Appears that Note 1 might reference the wrong table in the Remedial Investigation. Should this be Table 4-4B?
- e. Attachment 4, Table A4-5 – Missing MDEQ value of 1.06 micrograms per liter for SP-G. Range should be updated to include this result, so 0.9-1.06 micrograms per liter.
- f. Attachment 4, Figure A4-1 – Figure title says surface soil samples for PCBs, but Arcadis legend shows inorganic and exceedance of mercury. Not sure what figure is supposed to represent: PCBs or mercury? Assuming it is for PCBs, DW-4 is not a soil sample, it is sediment (as in the Remedial Investigation) and belongs on a different map, A4-2, with the 0.5 Preliminary Remediation Goal, not the 2.5 Preliminary Remediation Goal for soil.
- g. Attachment 4, Figure A4-1 – Arcadis added RP-2 to the subsurface soil in this figure. In the Remedial Investigation, this sample is considered a sediment sample, along with RP-1 and RP-3, both of which are above Preliminary Remediation Goals for sediment but not for soil; starting to appear that Arcadis has reclassified sediment/soil for some samples which will impact how many will exceed Preliminary Remediation Goals, especially going from a sediment classification in the Remedial Investigation to a soil classification in the Feasibility Study.
- h. Attachment 4, Figure A4-3:
 - i. RC-1 is considered an exceedance of Preliminary Remediation Goals in Table A4-3 but Figure A4-3 shows that it is below criteria. RC-1 should be shown as an exceedance.
 - ii. Footnote 2: 1) The Figure A4-5 reference is incorrect; 2) It shows reclassification of sediment to soil.
- i. Attachment 4, Figure A4-4 – Footnotes 1 and 2 are wrong.
 - i. Footnote 1 statement that subsurface sediment is equal to soil, so a Preliminary Remediation Goal of 16 is applied, is not correct. CH2M Hill's table explicitly has subsurface sediment Preliminary Remediation Goal as 0.5-0.6 milligrams per kilogram.

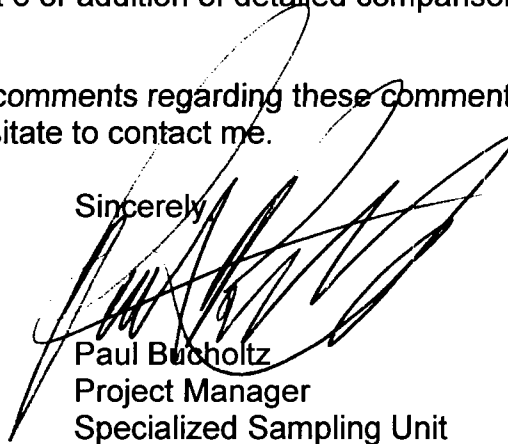
ii. Footnote 2 claims the Remedial Investigation has RP-1 and RP-2 as subsurface sediment and soils samples; cannot find in the Remedial Investigation where these samples are classified as anything other than subsurface sediment samples.

j. Attachment 5 – The information contained in Attachment 5 appears to be quite different from the information presented in the Remedial Investigation. Also, what is a “newly identified location of exceedance”?

71. Consider deletion of Attachment 6 or addition of detailed comparison to rail transportation risks.

Should you have any questions or comments regarding these comments on the Feasibility Study, please do not hesitate to contact me.

Sincerely,

A large, stylized handwritten signature in black ink, likely belonging to Paul Bucholtz, is written over the word 'Sincerely' and partially over the typed name.

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